NOVEL ROOF COATINGS BASED ON STYRENE-ACRYLIC COPOLYMERIC DISPERSIONS

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The great interest about environmental protection causes the popularity of water based indoors and masonry finishes all over the world. Today the part of water-based paints in building market is estimated near 75%. Wide range of paints without organic solvents is used to obtain masonry and interior coatings, special coatings for wood protection, for anticorrosive treatment and road marking.

The aim of this investigation was to work out water based paints for tile/fiber cement roofs. This paints must satisfy for two main requirements: to protect roofs and to prevent emission of asbestos fibers to the air. Asbestos containing roof products are still used in Belarus and unfortunately there is no substitute for them in the near future because of their low price.

The compositions of roof paints were examined by the author. The polymeric dispersion used in this study were styrene-acrylic copolymeric dispersion (Acronal) made by BASF (Germany). Calcium carbonate with wide range particles size was used as mineral filler. Talcum with average particle size 4μm was used to improve mechanical properties of coatings. Low toxic fungicides based on isotiazolinone were added to prevent microbiological degradation during exploitation of coatings. Reological properties of paints were controlled by water solution of hydroxyethylcellulose and acrylate metacrylic acid copolymer thickener. To colour the coatings unorganic pigments with high light fastness and weathering were used (iron and chromium oxides, opaque).

Elaborated coatings demonstrated high exploitation characteristics: high adhesiveness to concrete, low light fastness, low water vapour permeability (table 1).

Table 1. Exploitation characteristics of roof tile/fiber cement coatings.

Specification	Standard	Investigated samples
Solids content, %	45-50	49,5
Water fastness, h	min. 96	96 and more
Frost durability, cycles	min. 50	50 and more
Adhesiveness to concrete, MPa	min 1	2,1-2,2
Light fastness, %	max. 5	0,81
Water vapour permeability, mg/m·h·Pa	0,08-0,15	0,08
Cyclic temperature test, cycles	10	50 and more ($A_{50}=A_0$)
Atmospheric durability, cycles	100	100 and more ($A_{100}=0,9A_0$)

Elaborated water-based paints were applied to production in FE "CONDOR" in Brest, Republic of Belarus.

References

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